

Application No. 10/757,682
Response to Office Action

Customer No. 01933

REMARKS

Reconsideration of this application, as amended, is respectfully requested.

THE TITLE

The title has been amended to more clearly indicate the nature of the invention to which the claims are directed, as required by the Examiner.

THE CLAIMS

Claim 1 has been amended to clarify the feature of the present invention whereby a plasma arc is generated from a plasma torch that uses using a plurality of interchangeable consumable parts, and whereby the memory means stores consumption data on each of the plurality of consumable parts, as supported by the disclosure in the specification at, for example, page 9, line 19 to page 11, line 17.

In addition, claims 1-12 have been amended to better accord with amended independent claim 1 and/or to make some grammatical improvements and to correct some minor antecedent basis problems so as to put them in better form for issuance in a U.S. patent.

No new matter has been added, and it is respectfully requested that the amendments to the claims be approved and entered.

Application No. 10/757,682
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THE PRIOR ART REJECTION

Claims 1-4, 6 and 10-12 were rejected under 35 USC 102 as being anticipated by USP 5,717,187 ("Rogozinski et al"), and claims 1-12 were rejected under 35 USC 103 as being obvious in view of the combination of JP 02-006070 ("Nagasaka et al") and Rogozinski et al. These rejections, however, are respectfully traversed with respect to the claims as amended hereinabove.

As described in the Background Art section of the present application, different thicknesses of sheets to be cut require different values of arc current. And the different values of arc current correspond to different optimum nozzles and electrodes. Thus, if the type of sheet being cut is changed before the lifetime of the nozzle and/or electrode in use has expired, then the nozzle/electrode must be replaced before its lifetime expires. However, if the plasma processing apparatus is only able to track the lifetime of the nozzle/electrode in use, then it is not possible to accurately manage the lifetime of selectively used nozzles.

Therefore, according to the present invention as recited in amended independent claim 1, a plasma processing apparatus is provided in which a plasma arc is generated from a plasma torch using a plurality of interchangeable consumable parts. As recited in amended independent claim 1, the memory means stores

Application No. 10/757,682
Response to Office Action

Customer No. 01933

consumption data on each of the plurality of consumable parts, the selecting means selects the stored consumption data corresponding to a consumable part in use, the computing means calculates consumption based on the consumption data selected by the selecting means, and the displaying means displays the consumption calculated by the computing means. And as recited in amended independent claim 1, each of the consumable parts comprises at least one of an electrode and a nozzle.

That is, according to the present invention, consumption data is stored on, for example, each of a plurality of parts i_1 through i_n as shown in Table 1 on page 10 of the specification. Each consumable part corresponds to one or both of an electrode and nozzle. The consumable parts are selectively used based on, for example, the thickness of a sheet to be cut. And since consumption data is stored on each of the interchangeable consumable parts, it is possible to select the stored consumption data corresponding to the consumable part in use, and to perform accurate lifetime management of the plurality of parts even if the parts are interchanged.

The Examiner asserts that the logic tables 1 and 2 in column 9 of Rogozinski et al correspond to the memory means and selecting means of the claimed present invention. It is respectfully submitted, however, that Rogozinski et al merely discloses monitoring: (a) the voltage between the electrode and

Application No. 10/757,682
Response to Office Action

Customer No. 01933

workpiece, (b) the voltage between the electrode and the nozzle pressure, (c) the voltage between the nozzle (or electrode) and segments of a segmented probe, and (d) pressure in the plasma gas line. And it is respectfully submitted that Rogozinski et al merely discloses determining that a nozzle and/or electrode are worn when various combinations of thresholds based on the measured voltages and pressure are met.

It is respectfully submitted that logic tables 1 and 2 of Rogozinski et al do not show storing information on each of a plurality of interchangeable parts. And it is respectfully submitted that Rogozinski et al does not at all teach selecting stored data corresponding to the one of the interchangeable parts that is in use.

It is respectfully submitted, moreover, that Nagasaka et al also merely discloses disclose calculating the wear of a single electrode based on factors such as a number of working times and a working duration. And it is respectfully submitted that Nagasaka et al also does not at all disclose, teach or suggest storing information relating to a plurality of interchangeable consumable parts and selecting the stored information corresponding to the consumable part in use.

Therefore, it is respectfully submitted that even if Rogozinski et al and Nagasaka et al were combinable in the manner suggested by the Examiner, the structural features and

Application No. 10/757,682
Response to Office Action

Customer No. 01933

advantageous effects of the present invention as recited in amended independent claim 1 would still not be achieved or rendered obvious.


Accordingly, it is respectfully submitted that amended independent claim 1 and claims 2-12 depending therefrom clearly patentably distinguish over Rogozinski et al and Nagasaka et al, taken singly or in combination, under 35 USC 102 as well as under 35 USC 103.

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In view of the foregoing, entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned for prompt action.

Respectfully submitted,


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